CONSERVATION & MONITORING REPORT 2020: 2

The Status of the Re-introduced Hazel Dormouse Population at Freeholders' Wood



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Summary

In 2008 a total of 35 Hazel Dormice *Muscardinus avellanarius* were reintroduced into Freeholders' Wood, near Aysgarth in Wensleydale. Annual monitoring following the National Dormouse Monitoring Programme methodology has subsequently been undertaken by licenced staff and volunteers from the Yorkshire Dales National Park Authority.

The results show that the Dormouse population at Freeholders' Wood has fluctuated since the re-introduction. Although no detailed analysis has been undertaken, it would appear that poor weather in spring is likely to be the main factor limiting the population, rather than any changes in habitat.

Using Natural England criteria, this scheme has met the short-term success target with Dormice surviving the first two winters and breeding in the third year, and one of two medium-term targets of maintaining a stable population between years five and ten. No survey work has been undertaken away from Freeholders' Wood and so, at present, it is not possible to determine if the other medium-term target of showing that Dormice have dispersed outside the re-introduction site has been achieved.

Introduction

The Hazel Dormouse *Muscardinus avellanarius* (hereafter referred to as Dormouse) was once widespread in woodlands across the country but, has undergone a significant decline in both numbers and range over the past 100 years (Bright & Morris 1995, Sanderson 2004). Similarly, Howes (2004) concluded that the Dormouse population was relatively widespread in Yorkshire up until the late 19th Century, when changes in woodland management resulted in rapid declines and local extinctions.

Howes (2004) lists a few historical Dormice records within the Yorkshire Dales National Park including a reference to them being present in 'warm sheltered hazel thickets' at Aysgarth (almost certainly referring to Freeholders' Wood) and Bainbridge Gill, both in 1884, and also in the Askrigg area in 1905. Although more recent information is lacking, Howes (1985) concluded that by the end of the 1960s, Dormice were extinct in Yorkshire.

Following evidence that Dormouse populations had been lost from approximately half its former range in England, English Nature instigated a re-introduction scheme as part of the Species Recovery Programme in 1993, with the aim of restoring the Dormouse back to its native range (White, 2014). To date, 24 re-introductions have been undertaken as part of this programme (Wembridge *et al*., 2019), including reintroductions in Yorkshire near Helmsley in 1999 and Masham in 2004. Overall there has been varied success of these schemes but, only six of the reintroduced populations have subsequently died out (White, 2019).

In 2008 Freeholders' Wood in Wensleydale, a 14.87 ha semi-natural ancient woodland that has been wooded since at least 1778, was selected as a reintroduction site and 35 Dormice were released in June 2008. The details of the original reintroduction have been documented by White and Court (2012), with this report summarising the status of the population following the initial re-introduction.



Freeholders' Wood © YDNPA/Ian Court

Methodology

The reintroduction into Freeholders' Wood followed the methodology established by Bright and Morris (1994), with 20 female and 15 male captive bred Dormice reintroduced into the wood on 23 June 2008. Subsequent monitoring work was then undertaken annually following the National Dormouse Monitoring Programme survey guidelines (PTES 2011). As Dormice nests in natural woodland and hedgerow habitat can be difficult to find, establishing an accurate population size at a particular site is problematic. For the purposes of monitoring nest boxes are checked by licenced fieldworkers once each month from May to October, with numbers recorded used to give an index of the relative population size, rather than a definitive population total.

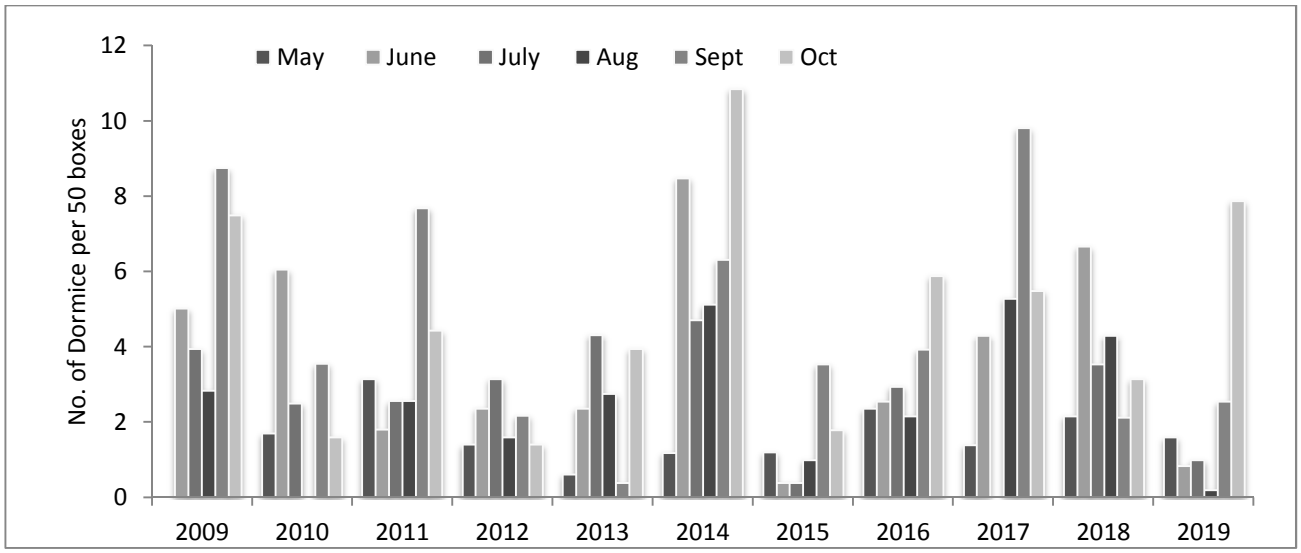
The sex, weight, breeding condition and number of young were recorded for every Dormice found. In addition, each animal was classed as being either 'adult', 'juvenile' or 'young'. Adults (i.e. animals that have survived at least one winter) were identified by the orange-brown colour of the fur, or juveniles (i.e. independent young in their first year with a weight of >10g) by their more brownish grey fur than an adult. Any young were classed as pink (no fur), grey (grey fur and eyes still closed) or eyes open (with grey-brown fur and eyes open). The numbers of boxes that contained distinctive Dormouse nests but had no Dormice were also recorded. The number of Dormice found per 50 boxes is used to compare annual totals. The peak count of adult Dormice in May and June (excluding any young animals borne in that year) expressed per 50 boxes is assumed to be in proportion to, and be a reliable measure of over-winter survival rates.

The peak counts of independent (adults and juvenile) and dependent (any aged as pink, grey or eyes open) Dormice in September and October are used to give an indication of breeding success.

Results

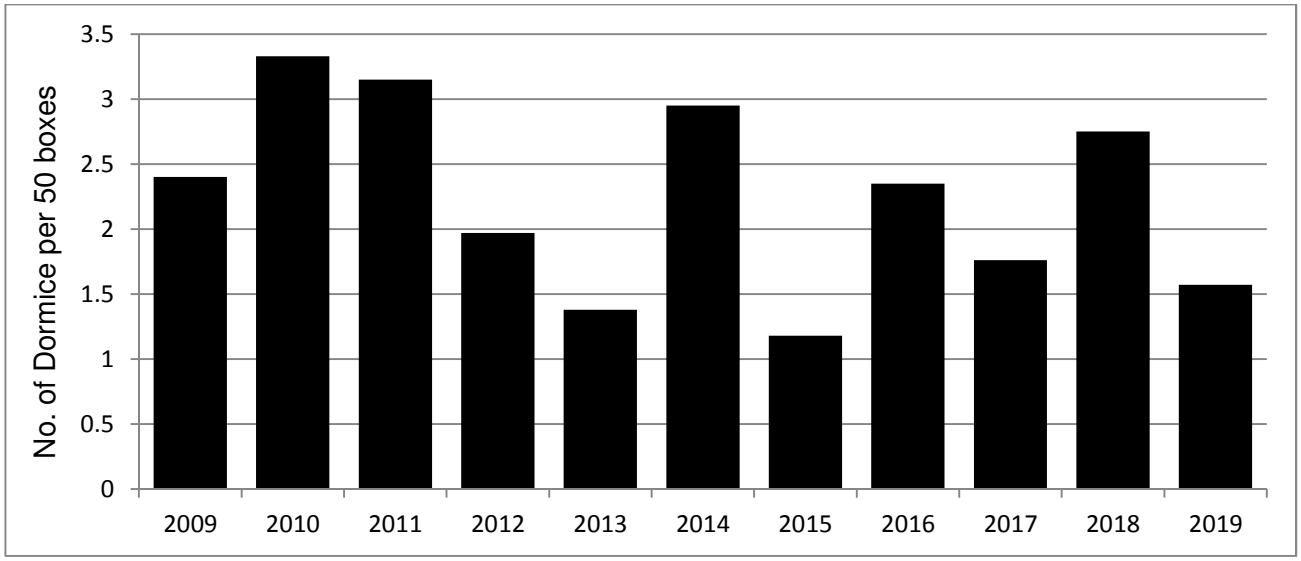
The numbers of Dormice found per 50 boxes during monthly counts are shown in Figure 1.

Figure 1. The number of Dormice found per 50 boxes during monthly counts at Freeholders' Wood between 2009 and 2019.



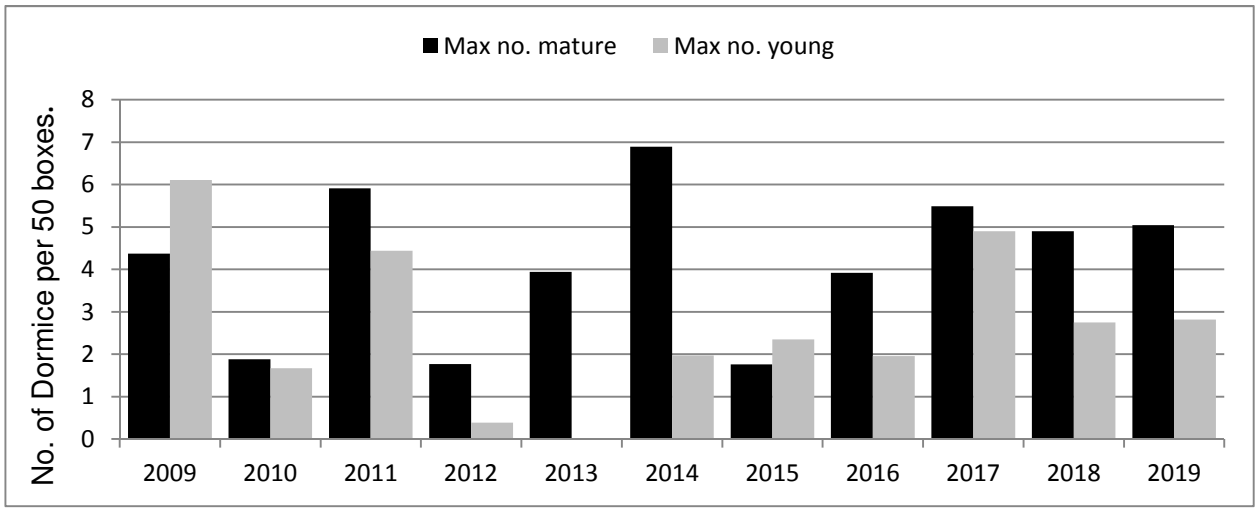
The peak count of adult Dormice per 50 boxes in the May and June are shown in Figure 2.

Figure 2. The peak count of adult Dormice (excluding any young animals borne in that year) in May or June in Freeholders' Wood between 2009 and 2019.



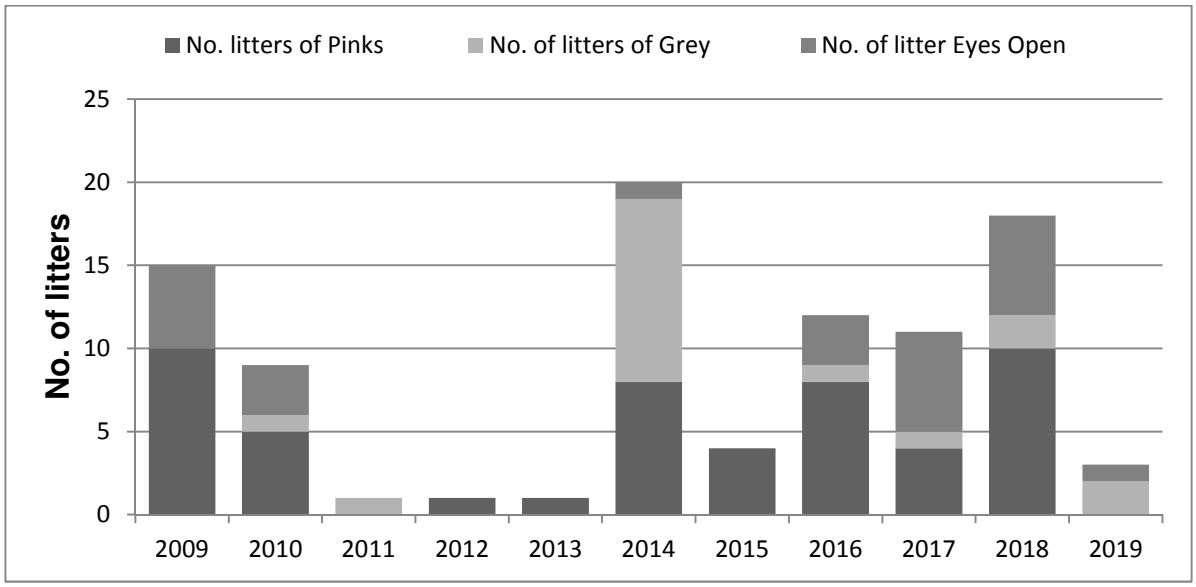
The peak counts of independent (adults and juvenile) and dependent (any aged as pink, grey or eyes open) Dormice in September and October are used to give an indication of breeding success, with the results shown in Figure 3.

Figure 3. The peak count of independent (adult and juvenile) and dependent Dormice (excluding any young animals borne in that year) in May or June in Freeholders' Wood between 2009 and 2019.



In trying to assess the number of annual breeding attempts, there is a risk of recording duplicate litters as juveniles will move between boxes. Corbett and Harris (1991) state that in young Dormice the pelage is well developed by 13 days, the eyes are open at 18 days and begin to leave the nest at 30 days. In addition, the guidelines for the NDMP categorise a juvenile as being approximately 28+ days old (PTES, undated). It is therefore assumed that any young of age class pink, eyes open or grey recorded on any one survey visit can be classed as a single breeding attempt, as by the time of the next survey one month later, they would likely to have been classed as a juvenile. The numbers of litters of pink, eyes open or grey are therefore used to determine the number of breeding attempts each year with the results shown in Figure 4.

Figure 4. The number of litters of age class pink, eyes open or grey Dormice recorded annually in Freeholders' Wood between 2009 and 2019.



Discussion

Dormice foraging is known to be affected by poor weather, with cold nights and rain or drizzle restricting activity (Bright *et al.,* 2006). Prolonged periods of cool, wet weather associated with prevailing westerly airflow also impacts on food supply by restricting the development of insects, flowering plants, seeds and fruits. This can limit breeding success by reducing fecundity, especially in northern areas at the edges of their natural distribution (Bright *et al.,* 2006, Wembridge, undated). Goodwin *et al.* (2018) also found that Dormice were more abundant and had higher numbers of litters at sites with warmer and sunnier weather in spring summer and autumn, and at sites with consistently cold temperatures in winter.

No detailed analysis has been undertaken to determine any correlation between precipitation, temperature and Dormouse numbers at Freeholders' Wood. From a simple comparison of monthly Dormouse counts and overall monthly weather conditions, it would appear that Dormouse numbers and productivity are lower in years with cool and wet weather, particularly when this occurs in April, May and June. This would seem to be the case in, for example 2012 and 2015.

In contrast, prolonged periods of warm and dry weather seem to have had a positive impact on the Dormouse population, notably in 2014, when the highest number of litters and the highest number of independent animals (i.e. adults and juveniles in autumn) were recorded at Freeholders' Wood since the original re-introduction. Although there is an annual small-scale coppicing programme, it is not thought that the changes in suitable available habitat are sufficient to explain the annual changes in the Dormouse population. The fluctuating Dormouse population in Freeholders' Wood is therefore most likely due to differing annual weather patterns, with poor weather reducing the food supply and foraging opportunities as detailed by Bright *et a*l., (2006).

Following a review of the Dormouse reintroduction programme, Natural England (2014) used the following criteria to assess the progress on the reintroductions:

- Short-term: did Dormice survive the first two winters and breed in the third year and,
- Medium term: did the Dormouse population at the release site, remain stable over a period of 5-10 years and disperse from there into adjacent areas outside the original wood?

The Freeholders' Wood reintroduction scheme has therefore met the short-term success criteria. The population is still extant afters ten year and despite annual fluctuations, appears to be stable so, meets one of the medium term success criteria. It is not known if the population has dispersed from the wood and so it is not know if the other indicator of success has been met. It had previously been reported by Natural England (2014) that Dormouse had been recorded outside of Freeholders Wood but, this record refers to an animal found in a small woodland compartment adjacent to, but within the overall footprint of Freeholders' Wood. No survey work has been undertaken to date outside of the wood and so it is not known if there has been any dispersal.

Further work to try and determine whether Dormice have dispersed into the surrounding area is planned to be undertaken in 2020 following on from the Wensleydale Dormouse Project. This was a three year project being undertaken by the YDNPA and People's Trust for Endangered Species to create a contiguous network of appropriately managed woodlands and hedgerows in the mid-Wensleydale area, to facilitate the expansion of the Dormouse population from the successful reintroduction site at Freeholders' Wood.

Acknowledgments

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